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REMARKS

Status of the Claims:

Claims 1-11, 13-25 and 27-33 are pending in the present application. Claims 12 and 26 have been previously cancelled. Claims 1-8, 13, 15-22, 27, 29, 30, 32 and 33 have been amended herein and are fully supported by the original specification (pages 6-10; substituted cyclic monoanhydrides are represented by the structures on these pages). Entry of the amendments to claims 1-8, 13, 15-22, 27, 29, 30, 32 and 33 are respectfully requested.

Claim Rejections – 35 USC § 102 Pfaendner

The Examiner has rejected claims 1, 2, 8, 10, 15, 22 and 24 under 35 USC 102(b) as anticipated by Pfaendner et al. (US 5,693,681). The Examiner states that Pfaendner et al. discloses substituted anhydrides at column 5.

Pfaendner et al. discloses only dianhydrides based upon the formula at column 5 lines 1-6. Pfaendner et al. does not disclose monoanhydrides. Therefore, Applicants have amended the rejected claims to clarify that the anhydrides of the present invention are monoanhydrides as represented by the structures on pages 6-10 of the original specification. Applicants believe that the amendment of the term anhydride to monoanhydride in the claims at issue overcomes the Examiners rejection. All claims dependent on independent claims 1, 2 and 15 have been similarly amended.

Applicants respectfully submit that the current rejection under 35 USC 102(b), anticipation by Pfaendner et al., has been effectively traversed and its withdrawal is therefore respectfully requested.

Claim Rejections – 35 USC § 103 Huang/Moeller

The Examiner has rejected claims 1-3, 5-9, 13-17, 19-23 and 27-33 under 35 USC 103(a) as being unpatentable over Huang (US 6,342,578) in view of Moeller et al. (US 6,630,050).

Assuming, *arguendo,* that the Examiner has established a proper *prima facie* case of obviousness, it is respectfully submitted that Applicant's claimed invention exhibits unexpected results in the use of substituted cyclic anhydrides versus unsubstituted cyclic anhydrides that rebut such. Applicants disclosed on page 3 paragraph 2 of the original specification that 'in the broadest sense, the present invention relates to the use of a liquid

cyclic anhydride at the time it is injected, as a carrier of additives in a polymer that is melt extruded into an article'. One skilled in the art would recognize that melting point is a property of some influence in the present invention. With the property of melting point in mind, Applicants direct the Examiner to Table 1 on pages 10-11 of the original specification. Table 1 discloses melting points of unsubstituted succinic anhydride and many substituted succinic anhydrides; unsubstituted glutaric anhydride and many substituted glutaric anhydrides; unsubstituted phthalic anhydride and many substituted phthalic anhydrides; and unsubstituted maleic anhydride and many substituted maleic anhydrides. None of the unsubstituted and substituted cyclic anhydrides in Table 1 have functionally equivalent melting points. The broad range of melting points for substituted cyclic anhydrides provides for unexpected versatility in processing conditions and stability of additives in the present invention. For example, in the method in which the cyclic anhydride carrier and additive are injected in the melt extrusion process (page 5 last paragraph) or at the end of a continuous polymerization process (page 6 first paragraph), a high temperature cyclic anhydride is required to avoid boiling (for instance, diphenyl maleic anhydride). Additionally, when the carrier and additive are introduced at the throat of the extruder of a perform injection molding machine (page 6 second paragraph) or when the additives are thermally unstable, the cyclic anhydride carrier should have a melting point near or below ambient temperature (for instance, cyclic anhydrides with a melting point below 50°C, page 11 first paragraph). Again, substituted cyclic anhydrides provide for unexpected versatility and stability in the present invention. Applicants believe that this showing effectively rebuts the Examiner's assertion that substituted and unsubstituted anhydrides are functionally equivalent.

Additionally, Applicants respectfully submit that Moeller et al. teaches away from the claimed invention. As the Examiner pointed out in the office action dated June 27, 2006, Moeller et al. 'discloses a range of substituted and unsubstituted anhydrides to be functionally equivalent'. Based upon the Applicants arguments above, substituted and unsubstituted anhydrides are not functionally equivalent. Therefore, Moeller et al. teaches away from the present invention.

Lastly, the Examiner stated that 'the addition of a methyl group would not significantly change the properties'. Applicants emphasize the following data from Table 1 pages 10-11.

Cyclic Anhydride	Melting Point (°C)
succinic anhydride	119-120
methyl succinic anhydride	33-35
glutaric anhydride	55-57
3-methyl glutaric anhydride	43-47
phthalic anhydride	131-134
4-methyl phthalic anhydride	90-92
Maleic anhydride	54-56
2-methyl maleic anhydride	7-8

In all these examples from Table 1, the addition of a methyl group to the cyclic anhydride significantly changes the melting point property by anywhere from about 10°C to about 85°C.

Applicants respectfully submit that the current rejection under 35 USC 103(a), obviousness under Huang in view of Moeller et al., has been effectively traversed and its withdrawal is therefore respectfully requested.

Claim Rejections – 35 USC § 103 Huang/Moeller/Yamamoto

The Examiner has rejected claims 11 and 25 under 35 USC 103(a) as being unpatentable over Huang (US 6,342,578) and Moeller et al. (US 6,630,050) in view of Yamamoto (JP Patent No. 06100767A).

Assuming, *arguendo*, that the Examiner has established a proper *prima facie* case of obviousness, it is respectfully submitted that Applicant's claimed invention exhibits unexpected results that rebut such. Applicants' arguments are the same as above with regard to the comparison of substituted cyclic anhydrides versus unsubstituted cyclic anhydrides. Applicants respectfully submit that it would not be obvious to one skilled in the art to use a substituted anhydride versus an unsubstituted anhydride as in Applicants' claimed invention. Applicant believes the point of whether Yamamoto teaches functional equivalency between polyethylene terephthalate and polyethylene naphthalate is moot.

Applicants respectfully submit that the current rejection under 35 USC 103(a), obviousness under Huang and Moeller et al. in view of Yamamoto, has been effectively traversed and its withdrawal is therefore respectfully requested.

Claim Rejections – 35 USC § 103 Huang/Savariar-Hauck

The Examiner has rejected claims 4, 13, 18 and 29 under 35 USC 103(a) as being unpatentable over Huang (US 6,342,578) in view of Savariar-Hauck et al. (US 5,695,905).

Applicants respectfully traverse this rejection on the grounds that the Examiner has not established a *prima facie* case of obviousness due to the fact that neither Huang nor Savariar-Hauck et al. suggest or motivate one of ordinary skill in the art to combine the teachings of the two references to obtain the presently claimed invention.

The Examiner stated in the Office Action dated June 27, 2006 that 'Huang discloses a resin comprising the reaction product of a polyester with a cyclic anhydride, which may contain additives'. As pointed out by the Examiner in the present Office Action, 'Huang does not disclose the use of substituted cyclic glutaric anhydrides'. Therefore, Applicants respectfully submit that there is no suggestion or motivation in Huang to combine the teachings of the two references.

Savariar-Hauck et al. discloses cyclic anhydrides intended to provide a spacer in a carboxyl group containing polymer that is to be reacted with the oxazoline compound to form the binder (col. 3, lines 1 -10, X is the spacer in formula (I), and col. 4, lines 62-66). The cyclic anhydrides' purpose in Savariar-Hauck et al. is to provide a carboxyl group terminated polymer (formula (I) page 3, line 4), where the preferred starting polymers (P) are cellulose ester of acetic acid, propionic acid, butyric acid ... as well as polymers based on vinyl alcohol, vinyl acetate and vinyl acetyl units (col. 4, lines 22-25). This is a completely different teaching and purpose as compared to the present invention's use of substituted cyclic anhydrides as reactive carriers. Savariar-Hauck et al. does not suggest or motivate this use or purpose.

Therefore, the Applicants believe that neither Huang nor Savariar-Hauck et al. suggest or motivate one of ordinary skill in the art to combine the two references.

Assuming, *arguendo,* that the Examiner has established a proper *prima facie* case of obviousness, it is respectfully submitted that Applicant's claimed invention exhibits unexpected results that rebut such. Arguments are the same as in the above 103(a)

rejection under Huang in view of Moeller et al. Applicants disclosed on table 1, page 11 of the original specification that unsubstituted glutaric anhydride has a melting point of 55-57 °C and substituted glutaric anhydride, specifically 3-methyl-glutaric anhydride, has a melting point of 43-47 °C. The melting points for substituted glutaric anhydrides provide for unexpected versatility in processing conditions and stability of additives in the present invention. When the carrier and additive are introduced at the throat of the extruder of a perform injection molding machine (page 6 second paragraph) or when the additives are thermally unstable, the cyclic anhydride carrier should have a melting point near or below ambient temperature (for instance, cyclic anhydrides with a melting point below 50°C, page 11 first paragraph). The Examiner's assertion that substituted glutaric anhydride and unsubstituted glutaric anhydride are functionally equivalent has been effectively rebutted.

Applicants respectfully submit that the current rejection under 35 USC 103(a), obviousness under Huang in view of Savaria-Hauck et al., has been effectively traversed and its withdrawal is therefore respectfully requested.

CONCLUSION

For the reasons stated above, claims 1-11, 13-25 and 27-33 are believed to be in condition for allowance. Accordingly, Applicants respectfully request that the Application be allowed. If prosecution may be further advanced, the Examiner is invited to telephone the undersigned to discuss this application.

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Respectfully submitted,

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